

## CLAIMS

I claim:

1           1.    A universal fleet electrical system for distributing  
2   electrical power to a plurality of aftermarket accessories in a  
3   fleet vehicle, comprising:

4               (a) a fuse panel adapted for connection to a fleet  
5   vehicle's battery, the fuse panel having a plurality of  
6   lighting circuit relays, each relay having a solenoid and  
7   normally open switch contacts, each relay further having a  
8   fuse in series with the relay solenoid;

9               (b) a lighting selection junction box electrically  
10   connected to said fuse panel, the lighting selection  
11   junction box having:

12               (i) a plurality of lighting circuits, each  
13               lighting circuit being connected to the  
14               switch contacts of a separate one of said  
15               plurality of lighting relays, each  
16               lighting circuit branching into a  
17               plurality of lighting subcircuits, each  
18               subcircuit having a fuse for circuit  
19               protection; and

20               (ii) at least one terminal block having a  
21               plurality of terminals, each lighting  
22               subcircuit being connected to a separate  
             terminal on said terminal block, each

24 terminal having a connector for attachment  
25 of a lighting subcircuit accessory wire;  
26 (iii) wherein a plurality of lighting subcircuit  
27 accessories are programmably connected to  
28 the switch contacts of a user selected  
29 lighting relay by connecting a connector  
30 from the subcircuit accessory to a  
31 terminal on said terminal block;  
32 (c) a console panel having a plurality of user operable  
33 switches for controlling operation of a plurality of  
34 aftermarket accessories added to the fleet vehicle, the  
35 console panel being electrically connected to said fuse  
36 panel and said lighting selection box; and  
37 (d) a universal wiring harness electrically connecting  
38 said fuse panel, said lighting selection junction box, and  
39 said console panel, the wiring harness having a plurality a  
40 connectors distributed throughout the fleet vehicle adapted  
41 for connection to aftermarket accessories, the connectors  
42 being configured as plug and play connectors, the wiring  
43 harness having a plurality of color-coded wires stamped with  
44 circuit identification labels, whereby installation and  
45 maintenance time for aftermarket accessories is reduced.

1        2. The universal fleet electrical system according to claim  
2 1, wherein said fuse panel further comprises:

3            (a) a positive voltage buss bar adapted for connection  
4 to a positive terminal of the fleet vehicle's battery;

5            (b) a ground buss adapted for connection to a negative  
6 terminal of the fleet vehicles battery;

7            (c) a pair of main power fuses, each main power fuse  
8 branching into a plurality of normally hot auxiliary  
9 circuits, each auxiliary circuit having a fuse for  
10 protection of the auxiliary circuit, the main power fuses  
11 being directly connected to said positive voltage buss bar  
12 so that the auxiliary circuits are normally hot, each  
13 auxiliary circuit having wires with red insulation and  
14 bearing indicia identifying the circuit for quick  
15 identification; and

16            (d) an ignition relay having a solenoid tapped into the  
17 fleet vehicle's ignition switch and having normally open  
18 switch contacts connected to a plurality of ignition  
19 controlled auxiliary circuits, each ignition controlled  
20 auxiliary circuit having an auxiliary fuse and having wires  
21 with orange insulation and bearing indicia for rapid circuit  
22 identification.

1        3. The universal fleet electrical system according to claim  
2 1, wherein said console panel further comprises:

3            (a) at least three lighting level switches, each  
4 lighting level switch being connected to a separate one of  
5 said lighting relays in order to control application of  
6 power to three different combinations of aftermarket  
7 lighting accessories by a single switch;

8            (b) a take down switch connected to one of said  
9 lighting relays for controlling application of power to  
10 aftermarket lighting accessories used when pulling over a  
11 motorist; and

12           (c) a spare switch connected to one of said lighting  
13 relays for providing a user with a programmable console  
14 switch for adding on additional aftermarket accessories.

1        4. The universal fleet electrical system according to claim  
2 3, wherein said fuse panel further comprises a pair of diodes  
3 connected in series between said three lighting level switches in  
4 order to prevent feedback when at least one accessory is commonly  
5 connected to more than one of said lighting level switches and  
6 both switches are turned to an "ON" position.

1        5. The universal fleet electrical system according to claim  
2 1, wherein said console panel further comprises a programmable  
3 timer delay connected to said universal wiring harness for  
4 turning off circuits a predetermined period of time after the  
5 fleet vehicle ignition switch is turned to an "OFF" position.

1        6. The universal fleet electrical system according to claim  
2 1, wherein said wiring harness includes a modular connector  
3 having:

4                (a) a through-the-roof base connector; and

5                (b) a light bar wiring harness having a weatherproof  
6 boot connector attachable to said base connector, the light  
7 bar wiring harness being adapted for a light bar accessory  
8 mountable on a roof of the fleet vehicle.

1        7. The universal fleet electrical system according to claim  
2 1, wherein said console panel further comprises a keyed switch  
3 interconnected with a security power control relay adapted for  
4 connection with a fleet vehicle's battery, the keyed switch and  
5 security power control relay enabling a user to connect and  
6 disconnect power to the universal wiring harness.

1        8. The universal fleet electrical system according to claim  
2 1, wherein said universal fleet electrical system further  
3 comprises a master switch with a circuit breaker adapted for  
4 connection to a fleet vehicle's battery, the master switch and  
5 circuit breaker enabling a user to connect and disconnect power  
6 to the universal wiring harness.

1        9. A universal fleet electrical system for distributing  
2 electrical power to a plurality of aftermarket accessories in a  
3 fleet vehicle, comprising:

4            (a) a fuse panel adapted for connection to a fleet  
5 vehicle's battery, the fuse panel having a plurality of  
6 lighting circuit relays, each relay having a solenoid and  
7 normally open switch contacts, each relay further having a  
8 fuse in series with the relay solenoid;

9            (b) a lighting selection junction box electrically  
10 connected to said fuse panel, the lighting selection  
11 junction box having:

12            (i) a plurality of lighting circuits, each  
13 lighting circuit being connected to the  
14 switch contacts of a separate one of said  
15 plurality of lighting relays, each  
16 lighting circuit branching into a  
17 plurality of lighting subcircuits, each  
18 subcircuit having a fuse for circuit  
19 protection; and

20 (ii) at least one terminal block having a  
21 plurality of terminals, each lighting  
22 subcircuit being connected to a separate  
23 terminal on said terminal block, each  
24 terminal having a connector for attachment  
25 of a lighting subcircuit accessory wire;

26 (iii) wherein a plurality of lighting subcircuit  
27 accessories are programmably connected to  
28 the switch contacts of a user selected  
29 lighting relay by connecting a connector  
30 from the subcircuit accessory to a  
31 terminal on said terminal block;

32 (b) a console panel having a plurality of user operable  
33 switches for controlling operation of a plurality of  
34 aftermarket accessories added to the fleet vehicle, the  
35 console panel being electrically connected to said fuse  
36 panel and said lighting selection box, the console panel  
37 having at least three lighting level switches, each lighting  
38 level switch being connectable to different combinations of  
39 aftermarket lighting accessories; and

40 (c) a universal wiring harness electrically connecting  
41 said fuse panel, said lighting selection junction box, and  
42 said console panel, the wiring harness having a plurality a  
43 connectors distributed throughout the fleet vehicle adapted  
44 for connection to aftermarket accessories, the connectors  
45 being configured as plug and play connectors.

1        10.    The universal fleet electrical system according to  
2 claim 9, wherein said universal wiring harness further comprises  
3 a plurality of color-coded wires stamped with circuit  
4 identification labels, whereby installation and maintenance time  
5 for aftermarket accessories is reduced.

1        11.    The universal fleet electrical system according to  
2 claim 9, wherein said fuse panel further comprises:

3            (a) a positive voltage buss bar adapted for connection  
4 to a positive terminal of the fleet vehicle's battery;

5            (b) a ground buss adapted for connection to a negative  
6 terminal of the fleet vehicles battery;

7            (c) a pair of main power fuses, each main power fuse  
8 branching into a plurality of normally hot auxiliary  
9 circuits, each auxiliary circuit having a fuse for  
10 protection of the auxiliary circuit, the main power fuses  
11 being directly connected to said positive voltage buss bar  
12 so that the auxiliary circuits are normally hot, each  
13 auxiliary circuit having wires with red insulation and  
14 bearing indicia identifying the circuit for quick  
15 identification; and

16            (e) an ignition relay having a solenoid tapped into the  
17 fleet vehicle's ignition switch and having normally open  
18 switch contacts connected to a plurality of ignition  
19 controlled auxiliary circuits, each ignition controlled  
20 auxiliary circuit having an auxiliary fuse and having wires



21 with orange insulation and bearing indicia for rapid circuit  
22 identification.

1 12. The universal fleet electrical system according to  
2 claim 9, wherein said console panel further comprises:

3 (a) at least three lighting level switches, each  
4 lighting level switch being connected to a separate one of  
5 said lighting relays in order to control application of  
6 power to three different combinations of aftermarket  
7 lighting accessories by a single switch;

8 (b) a take down switch connected to one of said  
9 lighting relays for controlling application of power to  
10 aftermarket lighting accessories used when pulling over a  
11 motorist; and

12 (c) a spare switch connected to one of said lighting  
13 relays for providing a user with a programmable console  
14 switch for adding on additional aftermarket accessories.

1 13. The universal fleet electrical system according to  
2 claim 12, wherein said fuse panel further comprises a pair of  
3 diodes connected in series between said three lighting level  
4 switches in order to prevent feedback when at least one accessory  
5 is commonly connected to more than one of said lighting level  
6 switches and both switches are turned to an "ON" position.

1        14.    The universal fleet electrical system according to  
2 claim 9, wherein said console panel further comprises a  
3 programmable timer delay connected to said universal wiring  
4 harness for turning off circuits a predetermined period of time  
5 after the fleet vehicle ignition switch is turned to an "OFF"  
6 position.

1        15.    The universal fleet electrical system according to  
2 claim 9, wherein said wiring harness includes a modular connector  
3 having:

- 4            (a) a through-the-roof base connector; and  
5            (b) a light bar wiring harness having a weatherproof  
6 boot connector attachable to said base connector, the light  
7 bar wiring harness being adapted for a light bar accessory  
8 mountable on a roof of the fleet vehicle.

1        16.    The universal fleet electrical system according to  
2 claim 9, wherein said console panel further comprises a keyed  
3 switch interconnected with a security power control relay adapted  
4 for connection with a fleet vehicle's battery, the keyed switch  
5 and security power control relay enabling a user to connect and  
6 disconnect power to the universal wiring harness.

1        17.    The universal fleet electrical system according to  
2 claim 9, wherein said universal fleet electrical system further  
3 comprises a master switch with a circuit breaker adapted for  
4 connection to a fleet vehicle's battery, the master switch and  
5 circuit breaker enabling a user to connect and disconnect power  
6 to the universal wiring harness.

1        18.    A universal fleet electrical system for distributing  
2 electrical power to a plurality of aftermarket accessories in a  
3 fleet vehicle, comprising:

4            (a) a fuse panel adapted for connection to a fleet  
5 vehicle's battery, the fuse panel having a plurality of  
6 lighting circuit relays, each relay having a solenoid and  
7 normally open switch contacts, each relay further having a  
8 fuse in series with the relay solenoid;

9            (b) a lighting selection junction box electrically  
10 connected to said fuse panel, the lighting selection  
11 junction box having:

12            (i) a plurality of lighting circuits, each  
13 lighting circuit being connected to the  
14 switch contacts of a separate one of said  
15 plurality of lighting relays, each  
16 lighting circuit branching into a  
17 plurality of lighting subcircuits, each  
18 subcircuit having a fuse for circuit  
19 protection; and

20 (ii) at least one terminal block having a  
21 plurality of terminals, each lighting  
22 subcircuit being connected to a separate  
23 terminal on said terminal block, each  
24 terminal having a connector for attachment  
25 of a lighting subcircuit accessory wire;

26 (iii) wherein a plurality of lighting subcircuit  
27 accessories are programmably connected to  
28 the switch contacts of a user selected  
29 lighting relay by connecting a connector  
30 from the subcircuit accessory to a  
31 terminal on said terminal block;

32 (b) a console panel having a plurality of user operable  
33 switches for controlling operation of a plurality of  
34 aftermarket accessories added to the fleet vehicle, the  
35 console panel being electrically connected to said fuse  
36 panel and said lighting selection box; and

37 (c) a universal wiring harness electrically connecting  
38 said fuse panel, said lighting selection junction box, and  
39 said console panel, the wiring harness having a plurality a  
40 connectors distributed throughout the fleet vehicle adapted  
41 for connection to aftermarket accessories, each of the  
42 connectors being configured as plug and play connectors, the  
43 wiring harness further having a serial communications cable  
44 and a power cable and connector extending to a console area  
45 of the vehicle and adapted for connection to a serial  
46 controller incorporated therein.

1        19.    The universal fleet electrical system according to  
2 claim 18, wherein said console panel further comprises a keyed  
3 switch interconnected with a security power control relay adapted  
4 for connection with a fleet vehicle's battery, the keyed switch  
5 and security power control relay enabling a user to connect and  
6 disconnect power to the universal wiring harness.

1        20.    The universal fleet electrical system according to  
2 claim 18, wherein said universal fleet electrical system further  
3 comprises a master switch with a circuit breaker adapted for  
4 connection to a fleet vehicle's battery, the master switch and  
5 circuit breaker enabling a user to connect and disconnect power  
6 to the universal wiring harness.